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## Reassessment and division of the genus *Agraecia* Audinet-Serville (Orthoptera: Tettigoniidae: Conocephalinae: Agraeciini)

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## Abstract


*Agraecia* Audinet-Serville, the type-genus of Agraeciini, comprises fifteen species names: thirteen used for extant species, one junior synonym, and one fossil. The species are morphologically very dissimilar, and were collected and described from different localities of the world. The genus was reassessed based on recently collected specimens from Brazil and Argentina as well as museum specimens. Based on morphological characteristics we re-delimit *Agraecia* **sensu novo**, keeping only two of the previously assigned species: *A. punctata* Saint-Fargeau & Audinet-Serville and *A. dorsalis* Karny. The subtribe Agraeciina **subtrib. nov.** is defined, which include *Agraecia* **s. nov.** and three new genera (*Iaratrox* Chamorro-Rengifo & Lopes-Andrade **gen. nov.**, *Starkonsa* Chamorro-Rengifo & Lopes-Andrade **gen. nov.**, and *Yvelinula* Chamorro-Rengifo & Lopes-Andrade **gen. nov.)**. Three additional genera treated here, *Parasubria* Karny, *Ragoniella* Chamorro-Rengifo & Lopes-Andrade **gen. nov.**, *Redtenbachus* Chamorro-Rengifo & Lopes-Andrade **gen. nov.** and *Sylvainhugiella* Chamorro-Rengifo & Lopes-Andrade **gen. nov.** currently remain unclassified inside Agraeciini. We designate a neotype and describe the female and male for *A. punctata*. Bertoniella Rehn is proposed as a junior synonym of Agraecia, and *Parasubria ziczac* Karny as **syn. nov.** of *Parasubria vittipes* (Redtenbacher) **comb. nov.** The fossil species is transferred to *Senexefigia*† Chamorro-Rengifo & Lopes-Andrade **gen. nov.** We also describe two new species of *Iaratrox* **gen. nov**., *I. brasilienses* Chamorro-Rengifo & Lopes-Andrade **sp. nov.** and *I. longicornia* Chamorro-Rengifo & Lopes-Andrade **sp. nov.** The holotype of *Agraecia fallax* Karny **nomen dubium** seems to be lost and the syntypes of

*Agraecia festae* Griffini are currently unavailable for examination, therefore, these two species are treated as incertae sedis, and should probably be transferred. A key to the studied genera is provided, as well as a key to species of *Agraecia* **s. nov.** and *Iaratrox* **gen. nov.** The calling songs of *Parasubria vittipes* (Redtenbacher) **comb. nov.** and *Ragoniella pulchella* (Hebard) **comb. nov.** are described. Numerous morphological details and some natural history aspects are discussed.

**Keywords:** Atlantic Forest, conservation units, katydids, Neotropics, South America, nomenclatural changes

## Introduction

Agraeciini Redtenbacher, 1891 are katydids that occur mainly in tropical and subtropical forests, on herbaceous vegetation and in the understory (Rentz 1976; Braun 2002), also in the canopy (Rentz *et al*. 2012), grassland and eucalyptus woodland (Naskrecki & Rentz 2010), fern and bamboo thickets of landslides (Braun 2008), and specialized forest microhabitats as on lichens (Rentz *et al*. 2012). Little is known about their feeding habits, there are records for feeding on flowers (Rentz 1976), dead wood (Ingrisch & Tan 2012), lepidopteran eggs (Montealegre-Z. & Morris 2003), and even preying on a land snail was observed (Leong 2011). Most species and genera are described from the Indomalayan and Australasian regions, as their katydid faunas were focus of major revisionary works (Ingrisch 1998; Ingrisch 2008; Ingrisch 2009; Naskrecki & Rentz 2010; Rentz *et al*. 2010; Rentz *et al*. 2012). Some of these genera are classified in four subtribes (number of genera in parentheses): Eumegalodontina (2), Liarina (26), Oxylakina (8) and Salomonina (5). The remaining 57 genera, including all the American fauna, remain ungrouped (Eades *et al*.). The American and African faunas are possibly also well diversified, but they were unsatisfactorily studied and their biomes insufficiently explored. The taxonomic limits of the tribe are barely defined (Nickle & Naskrecki 1997; Naskrecki 2000a) and several of the problematic genera occur in Central and South America. Additionally, there is little available information on important morphological characteristics of Neotropical species, in particular on the morphology of tegmina and postabdominal structures (cerci, paraprocts and phallus). The most nebulous genus of Agraeciini is *Agraecia* Audinet-Serville, an aggregate of not very closely related species that urge a taxonomic revision.

The controversy around *Agraecia* begun with its description. The author derived the generic name *Agraecia* based on the Greek words αγρος (agros = field) and οικεω (oikeo = to inhabit). The correct formation would be "*Agroecia*", a form first used by Burmeister (1838). However the original spelling did not use -oe-, but an old -ae- ligature, as substantiated by Audinet-Serville's approximately homonymous French name "Agrécie" and difference to a clear o-e ligature in *Chœradodis* in the same work (Walker & Gurney 1972). According to the ICZN (article 32.5.1), incorrect latinization is not to be considered an inadvertent error and therefore must not be emended (ICZN, 1999). The genus was erected for the sole species *Agraecia punctata* (Saint-Fargeau & Audinet-Serville, 1825), type species by monotypy, originally described as *Locusta punctata* based on two females collected in Brazil; subsequently Redtenbacher (1891) cited a specimen collected by Brunner from the south of the old state of Bahia, in Brazil. Then *Agraecia lateralis* (Erichson, 1842) now in genus *Coptaspis* Redtenbacher (Rentz 2009) was described from Tasmania. In 1884 *Agraecia nigrovittata* Bolívar, now *Eschatoceras nigrovittatus* (Bolívar), was described from Ecuador (Redtenbacher 1891). In 1888 two species were described from Papuasia, *Agraecia pupus* Saussure and *Agraecia godeffroy* Pictet, both moved to genus *Salomona* by Redtenbacher (1891). At the same time, Redtenbacher (1891) described nine species from different localities in the world: *A. abbreviata*, *A. maculata*, *A. nigrifrons*, *A. subulata*, *A. viridipennis*, *A. vittata*, and *A. vittipes* from South America; *A. sansibara* from Africa; and *A. differens* from Australia. These species were described from adult specimens, except for *A. vittata*, which was based on an immature female. Subsequently, *Agraecia festae* Griffini, 1896 was described from Panama, *A. dorsalis* Karny, 1907 from Brazil, *A. ornata* Karny, 1907 and *A. fallax* Karny, 1911 from New Guinea, *A. philippina* Karny, 1926 from the Philippines and *A. pulchella* Hebard, 1927 from Colombia. The fossil species *A. reticulata* Piton & Théobald, 1939 was described from a fossilized tegmen dated from the Oligocene. Then after 31 years without descriptions of *Agraecia*, *A. incognita* Piza, 1970 was described based on one male and three females supposedly lacking locality data (the type specimens actually do have labels with localities); and subsequently *A. malkini* Piza, 1978 was described from Brazil. Hugel (2009) described *A. cesairei* from the island of Martinique, including description of its calling song and morphology of the titillator, this being the first time such information was provided for a species of *Agraecia*. In the same work, *A. malkini* Piza was synonymized with *A. viridipennis* based on specimens collected in French Guiana (Huguel 2009). Finally, *Agraecia philippina* was transferred to